

ENVIRONMENTAL PRODUCT DECLARATION

VS

VINYL SHEET



Vinyl Sheet (LVS):

High performance heterogeneous vinyl sheet flooring with diverse design options.

Interface®

For more than four decades, Interface has consistently led the industry through design and innovation and is a world leader in environmental sustainability. We are committed to transparency and will continue to share our progress as we work to become a carbon negative company by 2040.

At Interface, we believe Life Cycle Assessment is critical for evaluating the environmental impacts of our products. The LCA-based Environmental Product Declaration is the best way to provide full disclosure of those impacts to our customers.

Interface was one of the first companies to develop EPDs for all of our products manufactured globally, and we are committed to providing this level of transparency to our customers, partners and the industry.

For more information visit www.interface.com.



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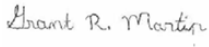

Interface®

Vinyl Sheet (VS)



According to ISO 14025,
EN 15804 and ISO 21930:2017

EPD PROGRAM AND PROGRAM OPERATOR NAME, ADDRESS, LOGO, AND WEBSITE	UL Environment 333 Pfingsten Road Northbrook, IL 60611	https://www.ul.com/ https://spot.ul.com
GENERAL PROGRAM INSTRUCTIONS AND VERSION NUMBER	General Program Instructions v.2.5 March 2020	
MANUFACTURER NAME AND ADDRESS	Interface, Inc.; Seoul, Korea	
DECLARATION NUMBER	N/A	
DECLARED PRODUCT & FUNCTIONAL UNIT OR DECLARED UNIT	Vinyl Sheet (VS) Flooring; Functional Unit of 1 square meter of floor covering	
REFERENCE PCR AND VERSION NUMBER	Part A: Life Cycle Assessment Calculation Rules and Report Requirements, (UL Environment, V3.2, 2018) and Part B: Flooring EPD Requirements (UL Environment V2.0, 2018)	
DESCRIPTION OF PRODUCT APPLICATION/USE	High performance heterogeneous vinyl sheet flooring with diverse design options	
DATE OF ISSUE	May 26, 2021	
VALIDITY DATE EXPIRATION	March 8, 2026	
EPD TYPE	Product-Specific	
EPD SCOPE	Cradle-to-grave	
LCA SOFTWARE & VERSION NUMBER	OpenLCA v1.10 software	
LCI DATABASE(S) & VERSION NUMBER	Ecoinvent v3.6 database	
LCIA METHODOLOGY & VERSION NUMBER	TRACI 2.1; CML - IA	

This PCR review was conducted by:	UL Environment
	PCR Review Panel
	epd@ulenvironment.com
This declaration was independently verified in accordance with ISO 14025: 2006. <input type="checkbox"/> INTERNAL <input checked="" type="checkbox"/> EXTERNAL	 Grant R. Martin, UL Environment
	 Tess Garvey, Ph.D., SCS Global Services
This life cycle assessment was independently verified in accordance with ISO 14044 and the reference PCR by:	

LIMITATIONS

Exclusions: EPDs do not indicate that any environmental or social performance benchmarks are met, and there may be impacts that they do not encompass. LCAs do not typically address the site-specific environmental impacts of raw material extraction, nor are they meant to assess human health toxicity. EPDs can complement but cannot replace tools and certifications that are designed to address these impacts and/or set performance thresholds – e.g. Type 1 certifications, health assessments and declarations, environmental impact assessments, etc.

Accuracy of Results: EPDs regularly rely on estimations of impacts; the level of accuracy in estimation of effect differs for any particular product line and reported impact.

Comparability: EPDs from different programs may not be comparable. Full conformance with a PCR allows EPD comparability only when all stages of a life cycle have been considered. However, variations and deviations are possible. Example of variations: Different LCA software and background LCI datasets may lead to differences results for upstream or downstream of the life cycle stages declared.



1. Product Definition and Information

1.1. Description of Company/Organization

Interface, Inc. is a global flooring company specializing in carbon neutral carpet tile and resilient flooring, including luxury vinyl flooring and nora® rubber flooring. We help our customers create high-performance interior spaces that support well-being, productivity, and creativity, as well as the sustainability of the planet. Our mission, Climate Take Back™, invites you to join us as we commit to operating in a way that is restorative to the planet and creates a climate fit for life.

1.2. Product Description

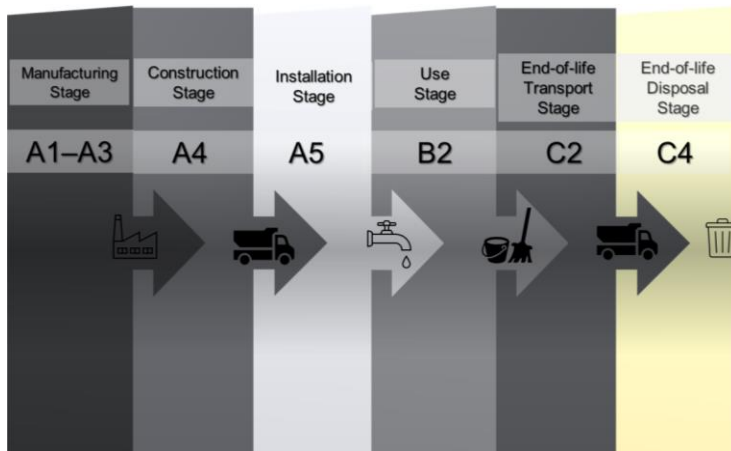
Product Identification

High performance heterogeneous vinyl sheet flooring with diverse design options.

Product Specification

UNSPSC code: 30161707

Flow Diagram



A1 – A3 includes:

Raw material extraction and processing (A1):

- Wood Harvesting & Processing
- Limestone Mining & Processing
- Crude Oil / Natural Gas Production
- Chemical and plastic production



Production & Transport of Components:

- Paper production
- Packaging production
- PVC & Plastics Production
- Plasticizer Production
- Pigment Production
- Stabilizer Production

1.3. Application

Application of product is intended for installation of floorcovering in residential and commercial buildings.

1.4. Declaration of Methodological Framework

The data is retrieved from a cradle to grave LCA study.

1.5. Technical Requirements

Technical Data

Name	Value	Unit
Product thickness*	2.50	mm
Wear layer thickness (where applicable) *	0.70	Mm
Product weight*	3.55	kg/m ²
Product form (sheet and roll)	Various	Mm

* nominal values

1.6. Market Placement / Application Rules

Technical specifications and product performance results for the LVS products can be found on the manufacturer's website. See https://www.interface.com/US/en-US/products/vinyl-sheet/vinyl-sheet-en_US .





1.7. Material Composition

Component	kg/m ²	Percent Mass (%)
PVC	1.60	45%
Filler	0.97	27%
Plasticizer	0.81	23%
Stabilizer	5.68E-02	1.60%
Pigments & Coatings	8.17E-02	2.30%
Other	2.84E-02	0.80%
Total	3.55	100%

*mass in nominal values

1.8. Manufacturing

LVS is manufactured in South Korea. The vinyl flooring is made primarily from polyvinyl chloride (PVC), calcium carbonate (mineral reinforcement), plasticizers, and additives (i.e. pigments and stabilizers). The product is structured with multiple layers including PVC backing, a PVC wear layer and a UV protective layer.

1.9. Packaging

Product is packaged with use of cardboard, plastic wrap and wooden pallet material. Packaging waste should be reused or sent local cardboard recycling facilities.

1.10. Transportation

Delivery is represented in Section 3, Table 1.

1.11. Product Installation

Product may be installed with hand tools. Impacts associated with packaging disposal are included with the installation phase as per PCR requirements.





1.12. Use

During the reference service life of the product, it should be cleaned in accordance with the product maintenance instructions including dust and damp mop cleaning and budding. The frequency is dependent upon the expected foot traffic and local conditions.

1.13. Reference Service Life

Reference service life is 30 years. For the B2 stage, one year of use life is represented.

1.14. Disposal

At end of life the product may be disposed of in a landfill or via incineration. In some instances, vinyl flooring may be recycled into other products. Products considered for Interface's recycling ReEntry process may be found by contacting Interface at 1 888-733-6873. Disposal in municipal landfill or commercial incineration facilities is permissible in accordance with local regulations.

2. Life Cycle Assessment Background Information

2.1. Functional or Declared Unit

The functional unit is one square meter of floorcovering.

LVS	Value	Unit
Functional unit	1	m ²
Mass*	3.55	kg

*nominal value

2.2. System Boundary

The LCA is for one square meter of flooring. Regardless of the warranted service life, modules B1, B3, B4, and B5 are not declared, so the maintenance (B2) is represented for **one year**. The system boundaries include:

- A1 Raw material extraction and processing, and processing of recycled materials
- A2 Transport to the factory
- A3 Manufacturing including materials, packaging, energy, and waste disposal or recycling
- A4 Transport to installation sites (Asia, US, and Europe)
- A5 Installation including ancillary materials required for installation and trim-waste disposal
- B2 Maintenance: Includes periodic cleaning
- C2 Transport of waste to local disposal
- C4 Disposal





2.3. Estimates and Assumptions

The LVS manufacturing facility is located in South Korea. To measure the local energy mix at the manufacturing facility, an Ecoinvent inventory dataset of the Korean energy grid is used to model emissions and resource use from electricity use.

For packaging, United States regional municipal waste statistics is used. The LVS product components are not assumed recycled.

For final disposal of the packaging material and flooring at end-of-life, it is assumed that all materials are a) landfilled, b) incinerated c) or sent to MRF for recycling. It is estimated that transportation for this process is approximately 32 km by diesel truck. Ecoinvent datasets are used for disposal in a landfill and waste incineration.

2.4. Cut-off Criteria

As dictated by the Part A: Calculation rules for the life cycle assessment and requirements, the cut-off criteria is less than 1% for energy use and less than 1% of total mass per unit process. No data gaps were allowed which were expected to significantly affect the outcome of the indicator results. No known flows are deliberately excluded from this EPD.

2.5. Data Sources and Quality

Primary data was provided by the manufacturer for their production facility. The sources of secondary LCI data came from the Ecoinvent database.

2.6. Period under Review

The data collection and the product review occurred during calendar year 2019.

2.7. Allocation

Manufacturing resource use was allocated to the product based on product area. Impacts from transportation were allocated based on the mass of material and distance transported.



3. Life Cycle Assessment Scenarios

Table 1. Transport to the building site (A4)

Name	Value	Unit
Fuel type	Diesel	
Fuel utilization	18.7	L/100km
Transport distance (diesel truck)	800	km
Capacity utilization (diesel truck)	76	%
Capacity utilization (ocean freight)	65	%
Transport distance (ocean freight)	18,000	km
Weight of products transported*	3.68	kg
*nominal values		

Table 2. Installation into the building (A5)

Name	Value	Unit
Ancillary materials	negligible	kg
Net freshwater consumption specified by water source and fate (amount evaporated, amount disposed to sewer)	-	m ³
Other resources	-	kg
Electricity consumption	-	kWh
Other energy carriers	-	MJ
Product loss per functional unit	negligible	kg
Waste materials at the construction site before waste processing, generated by product installation	negligible	kg
Output materials resulting from on-site waste processing (specified by route; e.g. for recycling, energy recovery and/or disposal)	n/a	kg
Mass of packaging waste specified by type		
	Corrugated board	.065 kg
	Adhesive	.000759 kg
	Wood	0.126 kg
Biogenic carbon contained in packaging	0.223	kg CO ₂
Direct emissions to ambient air, soil and water	-	kg
VOC content	-	µg/m ³





Table 3. Reference Service Life

NAME	VALUE	UNIT
RSL	30	years

Table 4. Maintenance (B2)

Maintenance process: damp mopping; Further assumptions: moderate traffic, weekly maintenance

Name	Value	Unit
Maintenance cycle	520	cycle/ RSL
Net freshwater consumption specified by water source and fate (disposed to sewer)	0.0058	m ³ /m ² /yr
Ancillary materials (cleaning agent)	0.0119	kg/m ² /year
Electricity	0.022	kWh/m ² /yr

Table 5. End of life (C2, C4)

NAME		VALUE	UNIT
Transport to site		32.0	km
Collection process (specified by type)	Collected separately	-	kg
	Collected with mixed construction waste	-	kg
Recovery (specified by type)	Reuse	n/a	kg
	Recycling	n/a	kg
	Landfill	3.55	kg
	Incineration	-	kg
	Incineration with energy recovery	-	kg
	Energy conversion efficiency rate	-	-
Disposal (specified by type)	Product or material for final deposition	-	kg
Removals of biogenic carbon (excluding packaging)		-	kg CO ₂





4. Life Cycle Assessment Results

Table 6. Description of the system boundary modules

EPD Type	PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARY
	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
	Raw material supply	Transport	Manufacturing	Transport from gate to site	Assembly/Install	Use	Maintenance	Repair	Replacement	Refurbishment	Building Operational Energy Use During Product Use	Building Operational Water Use During Product Use	Deconstruction	Transport	Waste processing	Disposal	Reuse, Recovery, Recycling Potential
	X			X	X	MND	X	MND	MND	MND	MND	MND	MND	X	MND	X	MND

MND: Module Not Declared. MND for stages with impacts considered negligible or effectively zero. Note that impacts in Use Stage are measured for 1 year use life of product.

4.1. Life Cycle Impact Assessment Results

Table 7. North American Impact Assessment Results

TRACI v2.1	A1-A3	A4	A5	B2	C2	C4
GWP [kg CO2 eq]	7.53E+00	1.12E+00	1.09E-02	1.26E-01	1.45E-01	1.20E+00
ODP [kg CFC-11 eq]	2.30E-06	2.49E-07	1.49E-09	9.08E-09	3.36E-08	1.32E-08
AP [kg SO2 eq]	2.97E-02	1.95E-02	4.04E-05	5.92E-04	8.37E-04	1.23E-03
EP [kg N eq]	1.83E-02	1.53E-03	5.57E-04	4.91E-04	1.10E-04	2.60E-02
SFP [kg O3 eq]	3.84E-01	3.72E-01	1.09E-03	6.76E-03	2.37E-02	9.03E-03

Caption	GWP 100 = global warming potential; ODP = ozone depletion potential; AP = acidification potential; EP = eutrophication potential; SFP = smog formation potential; ADP fossil= abiotic resource depletion potential of non-renewable (fossil) energy resources
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According to ISO 14025,
EN 15804 and ISO 21930:2017

Table 8. EU Impact Assessment Results

CML v4.2	A1-A3	A4	A5	B2	C2	C4
GWP 100 [kg CO ₂ eq]	7.68E+00	1.12E+00	1.14E-02	1.28E-01	1.45E-01	1.34E+00
ODP [kg CFC-11 eq]	2.17E-06	1.87E-07	1.12E-09	7.53E-09	2.52E-08	9.96E-09
AP [kg SO ₂ eq]	2.89E-02	1.82E-02	3.17E-05	5.72E-04	6.77E-04	3.92E-04
EP [kg PO ₄ ³⁻ eq]	9.40E-03	2.28E-03	2.05E-04	2.43E-04	1.46E-04	9.57E-03
POCP [kg ethene eq]	1.73E-03	4.91E-04	2.14E-06	3.76E-05	2.24E-05	2.83E-04
ADP _{element} [kg Sb-eq]	5.86E-07	7.40E-10	3.42E-12	8.01E-10	3.96E-11	1.58E-10
ADP _{fossil} [MJ, LHV]	1.70E+02	1.53E+01	9.18E-02	2.64E+00	1.98E+00	1.01E+00

Caption	<p>GWP 100 = global warming potential; ODP = depletion potential of the stratospheric ozone layer; AP = acidification potential of soil and water; EP = eutrophication potential; POCP = photochemical oxidant creation potential; ADP - elements = Abiotic depletion potential for non-fossil resources; ADP- fossil fuels = abiotic depletion potential for fossil resources</p>
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4.2. Life Cycle Inventory Results

Table 9. Resource Use

Parameter	A1-A3	A4	A5	B2	C2	C4
RPRE [MJ, LHV]	8.65E+00	1.35E-01	6.42E-04	2.60E-01	7.30E-03	3.51E-02
RPRM [MJ, LHV]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RPRT [MJ, LHV]	-	-	-	-	-	-
NRPRE [MJ, LHV]	-	-	-	-	-	-
NRPRM [MJ, LHV]	-	-	-	-	-	-
NRPRT [MJ, LHV]	-	-	-	-	-	-
SM [kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF [MJ, LHV]	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible
NRSF [MJ, LHV]	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible
RE [MJ, LHV]	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible
FW [m ³]	4.59E-01	8.41E-03	5.61E-05	1.58E+00	6.52E-04	2.02E-03

Caption	<p>RPRE = Renewable primary resources used as energy carrier (fuel); RPRM=Renewable primary resources with energy content used as material; NRPRE= Non-renewable primary resources used as an energy carrier (fuel); NRPRM= Non-renewable primary resources with energy content used as material; SM= Secondary materials; RSF=Renewable secondary fuels; NRSF: Non-renewable secondary fuels; RE= Recovered energy; FW=Use of net fresh water resources</p>
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According to ISO 14025,
EN 15804 and ISO 21930:2017

Table 10. Output Flows and Waste Categories

Parameter	A1-A3	A4	A5	B2	C2	C4
HWD [kg]	9.43E-05	2.71E-05	2.28E-07	1.45E-06	5.39E-06	2.81E-06
NHWD [kg]	7.56E-01	3.74E-01	7.60E-02	1.15E-02	9.38E-03	3.56E+00
HLRW [kg]	3.28E-05	3.13E-09	3.15E-09	1.15E-02	9.38E-02	3.56E+00
ILLRW [kg]	2.20E-04	1.04E-04	6.21E-07	2.67E-06	1.41E-05	0.00000562
CRU [kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MR [kg]	0.00E+00	0.00E+00	3.31E-02	0.00E+00	0.00E+00	0.00E+00
MER [kg]	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible
EE [MJ, LHV]	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible

Caption	<p>HWD = hazardous waste disposed; NHWD= non-hazardous waste disposed; HLRW = high-level radioactive waste, conditioned, to final repository; ILLRW = intermediate and low-level radioactive waste, conditioned to final repository; CRU= components for reuse; MR=materials for recycling; MER=materials for energy recovery; EE= Recovered energy exported from the product system</p>
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5. LCA Interpretation

Like many other flooring products, life cycle impacts of LVS are driven by the Product Stage (A1-A3) and the impacts from this stage are driven by raw materials. Over the entire life cycle, the product use and maintenance phase (B2) is the largest contributor to overall impacts, following the manufacturing raw material extraction and processing phases (A1-A3).

6. Additional Environmental Information

6.1. Environment and Health During Manufacturing

More information on product stewardship can be found on [Interface’s sustainability website](#).

6.2. Environment and Health During Installation

All recommendations shall be utilized as indicated by SDS and installation guidelines.





6.3. Environmental Activities and Certifications

All environmental activities and certifications can be found on [Interface's sustainability website](#).

7. References

EN 15804: EN 15804:2012-04+A1 2013: Sustainability of construction works - Environmental Product Declarations - Core rules for the product category of construction products

ISO 14025: DIN EN ISO 14025:2011-10: Environmental labels and declarations - Type III environmental declarations- Principles and procedures

ISO 14040 (2006). Environmental management - Life cycle assessment – Principles and framework

ISO 14044 (2006). Environmental management - Life cycle assessment – Requirements and guidelines

ISO 21930: 2017 Sustainability in buildings and civil engineering works – Core rules for environmental product declarations of construction products and services

Life Cycle Assessment of Luxury Vinyl Flooring. SCS Global Services Report. 2021.

UL Environment General Program Instructions March 2020, version 2.5

UL Environment (2018) Product Category Rules for Building-Related Products and Services, adapted for UL Environment from the range of Environmental Product Declarations of institute Construction

UL Environment (2020) PCR Guidance- Texts for Building-Related Products and Services. Part B: Requirements on the EPD for Floor coverings